A.30 San Joaquin Spearscale (*Atriplex joaquiniana*)

A.30.1 Legal Status

San Joaquin spearscale (*Atriplex joaquiniana*) is not listed under either federal or California Endangered Species Acts. Its Heritage Ranking in the California Natural Diversity Database is G2/S2.1 which means that globally (G) and within the state (S) there are either between six to 20 viable element occurrences of this species, 1,000 to 3,000 individuals of this species, or 2,000 to 10,000 acres where this species occurs. Its state threat level rank is "very threatened."

The California Native Plant Society (CNPS) List ranking of 1B.2 indicates that it is rare, threatened, or endangered in California and elsewhere, and is considered by CNPS to be fairly endangered in California with between 20 to 80 percent of occurrences threatened. Plants with a List rank of 1B are considered by the California Native Plant Society to meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Fish and Game Code.

A.30.2 Species Distribution and Status

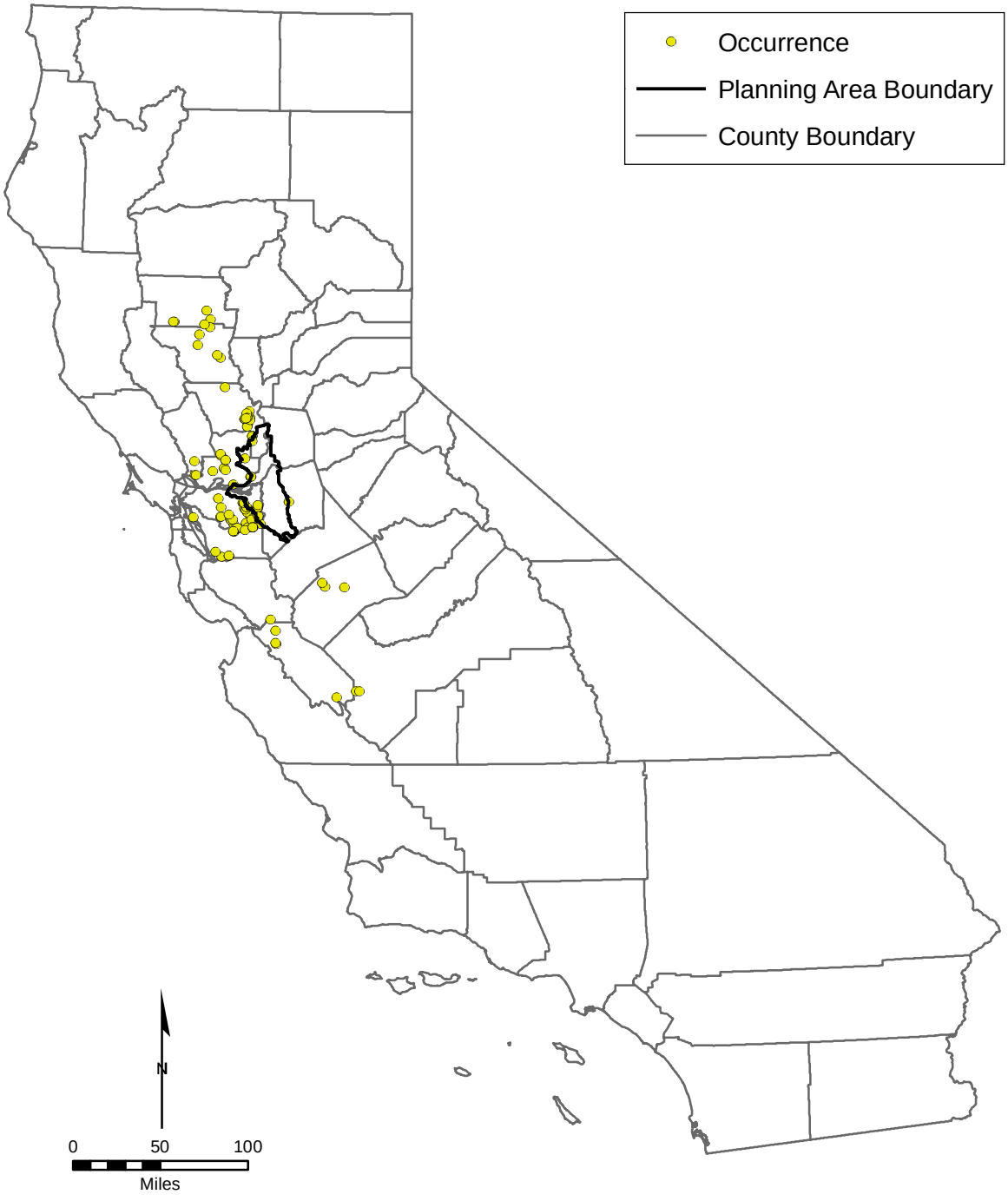
Range and Status

The range of San Joaquin spearscale includes Glenn, Colusa and Yolo counties to the north, Contra Costa, Santa Clara, San Benito, Napa, Solano, and Alameda counties to the west, Sacramento, Fresno, Merced, and San Joaquin counties to the south (Figure A.30.1). Population trends of San Joaquin spearscale have not been documented. According to the CNPS (2008), occurrences of San Joaquin spearscale in California are limited and at risk throughout its range, although it may have been more abundant historically.

Endemic to California, San Joaquin spearscale historically has been collected in the Central Valley from Glenn County south to Merced County (Silveira 2000, CNDDB 2008). Specimens have also been collected in the inner North Coast Ranges in Glenn County and in the ranges of Alameda, Contra Costa and San Benito counties (Silveira 2000, CNDDB 2008). It has been collected in, or adjacent to, salt marshes in Napa, Sacramento, San Luis Obispo, and Solano counties and on the shore of a small lake in Solano County (CNDDB 2008). Populations remain extant at many of the collection sites. Of 94 observations of the distribution of San Joaquin spearscale in California, seven occurred in Yolo County (CalFlora 2000, CNDDB 2008). In Yolo County, San Joaquin spearscale has been collected on, and adjacent to, alkaline soils north of Davis, east of the City of Woodland, the McClellan AFB Davis Communications Facility site, the DFG Tule Ranch Preserve, which is within the BDCP Planning Area, and near Dunnigan (Showers 1996, EDAW 2004, Environmental Science Associates, Yolo County Planning & Public Works Department 2005, Dean 2007, CNDDB 2008).

Distribution and Status in the Planning Area

Within the BDCP Planning Area, San Joaquin spearscale has been observed near Hass Slough, Orwood Tract, Byron Tract, Clifton Court Forebay, and northwest of Collinsville (CNDDB 2008) (Figure A.30.2).



Source: California Department of Fish and Game, CNDDB, 2008.
Consortium of California Herbaria, 2008.

Figure A.30.1. San Joaquin Spearscale Statewide Recorded Occurrences

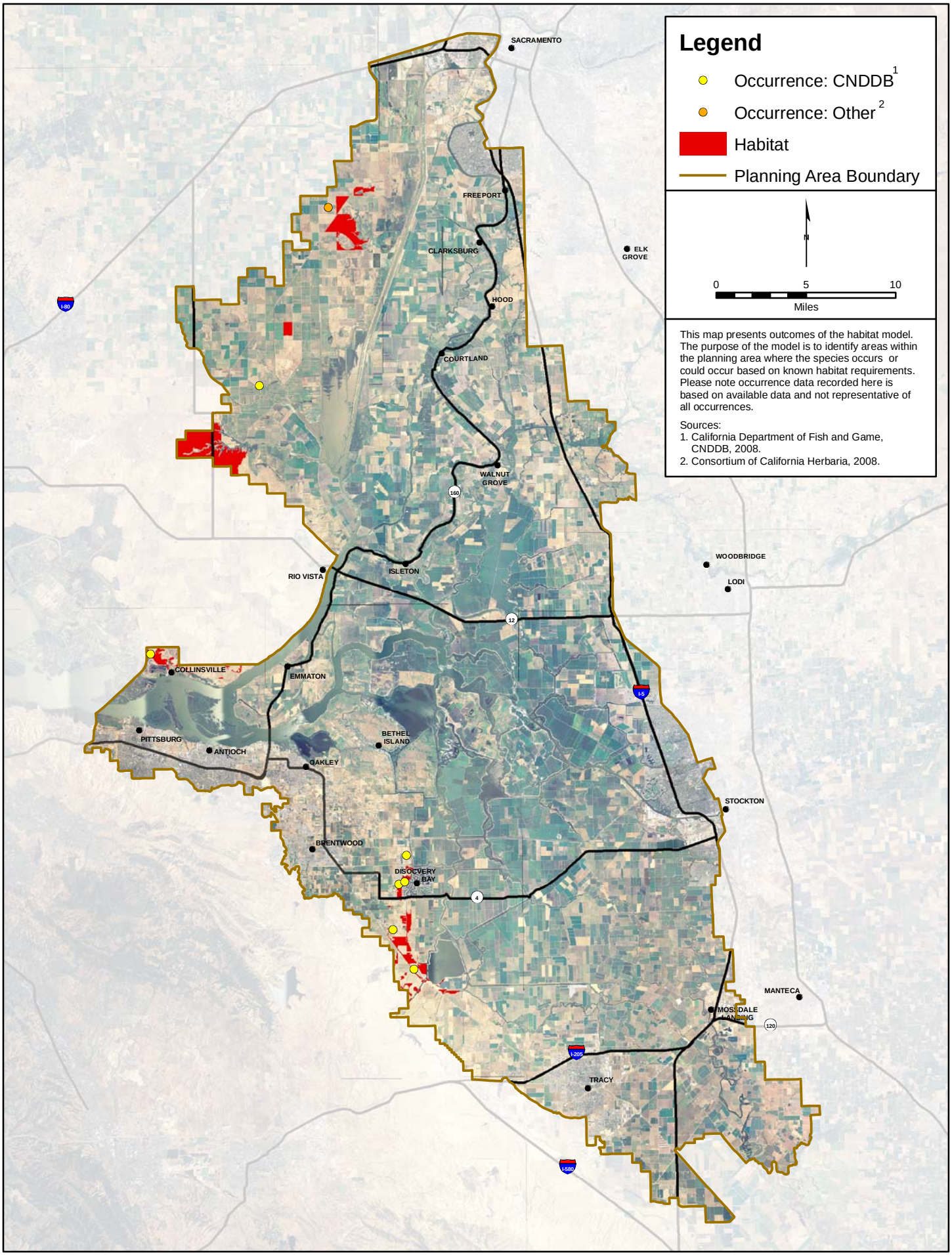


Figure A.30.2. San Joaquin Spearscale Habitat Model and Recorded Occurrences

A.30.3 Habitat Requirements and Special Considerations

San Joaquin spearscale occurs in chenopod scrub and in meadows, playas, valley grassland, and foothill grassland vegetation growing on alkaline soils. In the Central Valley of California, it appears to be restricted to alkaline soils along the rims of alkaline basins and the edges of clay bottom vernal pools (CNDDB 2008). It is also found in alkaline and saline soils near creeks and seeps of the eastern flank of the inner North Coast Ranges (Taylor and Wilken 1993, CNDDB 2008). Suitable saline or alkaline soils occur near springs and seeps in the Blue Ridge and the Capay Hills (Schaal et al. 1994) and may support populations of San Joaquin spearscale. Similar soils occur in the alluvial fans of Brushy, Kellogg, and Marsh creeks along the northeastern edge of the San Joaquin Valley. In many instances, the species occurs with, or is found near, populations of brittlescale (*Atriplex depressa*) and palmate-bracted bird's-beak (*Cordylanthus palmatus*) (CNDDB 2008).

A.30.4 Life History

San Joaquin spearscale was first described in 1904 by A. Nelson (Nelson 1904). It is a 10 to 100 cm tall herbaceous annual plant in the goosefoot family (Chenopodiaceae) (Taylor and Wilken 1993). The species is also known as San Joaquin saltbush and San Joaquin orache (Taylor and Wilken 1993, CalFlora 2000). It has erect stems, with many branches, which spread out as the plant ascends. The twigs are dense and finely scaled, becoming glabrous (hairless and smooth). The ovate to triangular-shaped leaves measure 10 to 70 mm (Taylor and Wilken 1993). The leaves are finely gray-scaled and may be green above. They are also generally irregularly wavy-toothed, with the base truncated and tapered in form (Taylor and Wilken 1993). The staminate inflorescence is spike- or panicle-like, which refers to branched clusters of flowers in which the branches are racemes. They are congested on the ends of the main stem and branches, resembling little "sausages." Species of Atriplex are most easily identified after flowering, based on fruiting bracts enclosing the seed (Hickman 1993). San Joaquin spearscale blooms from April through October, depending upon environmental conditions (CNPS 2008). The seeds are approximately one to 1.5 mm in length and are dark brown (Taylor and Wilken 1993). Very little is known about the biology and germination patterns of the species; however, spearscale is known to produce a long-lived seed bank that germinates in response to soil disturbances and can persist in weedy grasslands dominated by exotic species (EDAW 2004).

A.30.5 Threats and Stressors

Development, intensive agriculture, waterfowl management, and exotic plant species are considered to be the primary threats to the species (Showers 1996, EDAW 2004, CNDDB 2008). All of these impacts lead to loss of habitat and degradation of the specific soils the plant requires to survive. Research should be directed towards invasive species control methods and techniques for establishing the appropriate hydrological regime to maintain the saline and alkaline soils.

A.30.6 Relevant Conservation Efforts

San Joaquin spearscale is a proposed covered species under the East Contra Costa Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) which includes measures to protect populations and habitat. San Joaquin spearscale is proposed for coverage under the Solano County HCP and the Yolo County HCP/NCCP.

A.30.7 Species Habitat Suitability Model

Habitat. San Joaquin Spearscale habitat was identified as Natural Seasonal Wetlands and Grasslands on Antioch (AoA), Capay (Ca, Cc), Clear Lake (Ck), Diablo (DaC), Hillgate (HcA), Marcuse (Mb, Mc, Sb), Marvin (Mf), Pescadero (Pc, Pk), Rincon (Rg), Scribner (245), and Solano (Sh, Sk) soils (Figure A.30.2). Vegetation types designated as species habitat in this model correspond to the mapped vegetation associations in the BDCP GIS vegetation data layer. Aerial imagery (USDA 2005) and LiDAR elevation data (DWR 2007) were used to determine how intensively parcels included in the model had been farmed as the vegetation data included significant areas of fallow agricultural land that had been misclassified by DFG as various classes of natural vegetation. Parcels without natural vernal pool and swale vegetation signatures and microtopography were deleted from the area of predicted habitat. Additionally, parcels with known occurrences were digitized and included as habitat.

Assumptions. Historical and current records of this species in the BDCP Planning Area indicate that its current distribution is limited to alkaline soil areas with vernal pool and swale microtopography along the eastern border of the BDCP Planning Area (Figure A.30.2) (CNDDB 2008). The vegetation cover of the alkaline soils is typically a combination of vernal pool adapted species, alkaline soil adapted species, and annual ryegrass (CNDDB 2008).

A.30.8 Recovery Goals

A recovery plan has not been prepared for this species and no recovery goals have been established.

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